UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,195	11/07/2002	Gilbert Wolrich	10559-304US1	1605

20985 7590 06/27/2006

FISH & RICHARDSON, PC
P.O. BOX 1022
MINNEAPOLIS, MN 55440-1022

EXAMINER	
LAI, VINCENT	
ART UNIT	PAPER NUMBER
2181	

DATE MAILED: 06/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,195	WOLRICH ET AL.	
	Examiner	Art Unit	
	Vincent Lai	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11/07/2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 November 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Ftzm. Flem

FRITZ FLEMING
Supervisory PRIMARY EXAMINER
GROUP 2100
AU 2181

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *Various Dates*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Priority is recognized from PCT/US00/23994, which claims the benefit of 60/151,961.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted were considered by the examiner.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Elements 13a and 13b of figure 1; and elements 29, 29a, 29b, and 29c of figure 2-2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: Element 27 and 72d. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "14" has been used to designate both the PCI bus and an unidentified object. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top

margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "56" has been used to designate both the PLL Grammar and pre fetch streaming buffer. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

6. The drawings are objected to because in figure 2-2, element label 16b points to a SDRAM, whereas in figure 1, element 16b points to a SRAM. Also label 72c is pointing to a mux where as it should be pointing to a register. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should

include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

7. On page 2 of the specification, an unrecognizable character is used in the first paragraph before the term "CUS."

8. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Branch Instruction for Processor With Branching Dependent on a Specified Bit in a Register."

Claim Objections

9. Claims 4-5 and 7-9 are objected to because of the following informalities: All claims in question are also dependent on claim 1, which reads on an apparatus claim, but appear to be method claims, and thus is claimed improperly. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. Claims 1-10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A computer instruction not specified to be stored in a computer readable medium is directed to non-statutory subject matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 4-5, and 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4-5, and 7-8 teach an option token and it is not clear as to whether the token is an essential part of the invention or not.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1- 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Cocke et al (U.S. Patent # 3,577,189), herein referred to as Cocke.

As per claim 1, Cocke discloses a computer instruction comprises:

a branch instruction (See column 13, lines 7-13: Branch instructions are a type of instruction disclosed) that causes an instruction stream to branch to an instruction (Inherent property of a branch instruction) based on any specified bit of a specified register being set or cleared (See column 10, lines 24-28: A bit indicates whether a branch target is present) and that specifies which bit of the specified register to use as a branch control bit (See column 10, lines 28-31: A bit position is given to store the bit which indicated that the instruction has a branch target).

As per claim 2, Cocke discloses further comprising:

a bit_position field that specifies the bit position of the branch control bit in a longword contained in a register (See column 10, lines 28-31).

As per claim 3, Cocke discloses further comprising:

A branch target field specified as a label in the instruction (See figure 4a).

As per claim 4, Cocke discloses further comprising:

an optional token that is set by a programmer and specifies a number i of instructions to execute following the branch instruction before performing the branch operation (See column 13, lines 51-69).

As per claim 5, Cocke discloses further comprising:

an optional token that is set by a programmer and specifies a number i of instructions to execute following the branch instruction before performing the branch operation where the number of instructions can be specified as one, two, or three (See column 13, lines 51-69 and figure 1a: Number of buffers is variable)

As per claim 6, Cocke discloses wherein the register is a context-relative transfer register or a general-purpose register that holds the operand (See column 6, lines 7-12: A plurality of registers is disclosed).

As per claim 7, Cocke discloses further comprising:

an optional token that is set by a programmer and which specifies a guess_branch prefetch for the instruction for the "branch taken" condition rather than the next sequential instruction (See column 4, lines 57-59).

As per claim 8, Cocke discloses further comprising: an optional token that is set by a programmer and specifies a number i of instructions to execute following the branch instruction before performing the branch operation (See column 13, lines 51-69); and

a second optional token that is set by a programmer and which specifies a guess_branch prefetch for the instruction for the "branch taken" condition rather than the next sequential instruction (See column 4, lines 57-59).

As per claim 9, Cocke discloses wherein the instruction allows a programmer to select which bit of the register to used to determine the branch operation (See column 10, lines 24-32).

As per claim 10, Cocke discloses wherein the instructions allows branches to occur based on evaluation of a bit that is in a data path of a processor (See column 4, lines 59-61).

As per claim 11, Cocke discloses a method of operating a processor comprises:

evaluating a specified bit of a specified register designated to use as a branch control bit (See column 10, lines 28-31); and

performing a branching operation based on the specified bit of the specified register being set or cleared (See column 10, lines 24-28: A bit indicates whether a branch target is present).

As per claim 12, Cocke discloses wherein the specified bit position is in a longword contained in a register (See column 10, lines 28-31).

As per claim 13, Cocke discloses further comprising:

branching to an instruction at a branch target field specified as a label in the instruction (See figure 4a).

As per claim 14, Cocke discloses wherein the specified bit is specified by a programmer (See column 10, lines 24-32).

As per claim 15, Cocke discloses further comprising:

executing a number i of instructions following execution of the branch instruction before performing the branch operation based on evaluating an optional token that is set by a programmer (See column 13, lines 51-69).

As per claim 16, Cocke discloses wherein the register is a context-relative transfer register or a general-purpose register that holds the operand (See column 6, lines 7-12: A plurality of registers is disclosed).

As per claim 17, Cocke discloses further comprising:

prefetching a branch taken instruction based on an optional token that is set by a programmer, and which specifies a guess_branch prefetch for the instruction for the "branch taken" condition rather than the next sequential instruction (See column 4, lines 57-59).

As per claim 18, Cocke discloses further comprising:

executing a number i of instructions following execution of the branch instruction before performing the branch operation based on evaluating a first optional token that is set by a programmer (See column 13, lines 51-69).

prefetching a branch taken instruction based on a second optional token that is set by a programmer, and which specifies a guess_branch prefetch for the instruction for the "branch taken" condition rather than the next sequential instruction (See column 4, lines 57-59).

As per claim 19, Cocke discloses wherein the instruction allows a programmer to select which bit of the specified register is used to determine the branch operation (See column 10, lines 24-32).

As per claim 20, Cocke discloses wherein branch evaluation occurs based on evaluation of bits that are in a data path of a processor (See column 4, lines 59-61).

As per claim 21, Cocke discloses a processor comprises:

a register stack (See column 5, lines 27-28: A stack is used);

an arithmetic logic unit coupled to the register stack (See figure 1a: The ALU is not specifically mentioned but ALU functions are shown as receiving instructions from the instruction decoder 40) and a program control store that stores a branch instruction (See figure 1a: Both the gate 4 and the predecoder store branch instructions) that causes the processor to:

evaluate a specified bit of a specified one of the registers of the register stack, the specified bit designated to use as a branch control bit (See column 10, lines 28-31: A bit position is given to store the bit which indicated that the instruction has a branch target); and

perform a branching operation specified by the branch instruction based on the specified bit of the register being set or cleared (See column 10, lines 24-28: A bit indicates whether a branch target is present).

As per claim 22, Cocke discloses wherein the specified bit is in a longword in a general purpose register (See column 10, lines 28-31).

As per claim 23, Cocke discloses further comprising:

a branch target field specified as a label in the instruction (See figure 4a).

As per claim 24, Cocke discloses wherein the specified bit is specified by a programmer (See column 10, lines 24-32).

As per claim 25, Cocke discloses wherein the register is a context-relative transfer register or a general-purpose register that holds the operand (See column 6, lines 7-12: A plurality of registers is disclosed).

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to show further art related to branch instruction for processor with branching dependent on a specified bit in a register:

U.S. Patent # 4,471,426 to McDonough shows a microcomputer which fetches two sets of microcode bits at one time.

U.S. Patent # 5,442,756 to Grochowski et al shows a branch prediction and resolution apparatus for a superscalar computer processor.

U.S. Patent # 6,385,720 B1 to Tanaka et al shows a branch prediction method and processor using origin information, relative position information and history information.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent Lai whose telephone number is (571) 272-6749. The examiner can normally be reached on M-F 8:00-5:30 (First BiWeek Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz M. Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vincent Lai
Examiner
Art Unit 2181

vl
June 22, 2006

FRITZ FLEMING
PRIMARY EXAMINER
GROUP 2100
AU 2181

Supervisor 6/23/2006